Title: The Big Picture

Brief Overview:

This activity allows students to solve problems that integrate patterns and their relationships. Students will examine patterns in order to find regularity in data when solving patterns.

Link to Standards:

- **Problem Solving** Students will demonstrate their ability to solve problems in mathematics, including problems with open-ended answers, problems which are solved in a cooperative atmosphere, and problems which are solved with the use of technology.
- **Communication** Students will demonstrate their ability to communicate mathematically. They will read, write, and discuss mathematics with language and the signs, symbols, and terms of the discipline.
- **Reasoning** Students will demonstrate their ability to reason mathematically. They will make conjectures, gather evidence, and build arguments.
- **Connections** Students will demonstrate their ability to connect mathematics topics within the discipline and with other disciplines.
- **Patterns and Functions** Students will demonstrate their ability to recognize numeric and geometric relationships and will generalize a relationship from data.

Grade/Level:

Grade 5

Duration/Length:

This lesson will take 3 periods (60 min.). Teacher discretion on duration based on level of group.

Prerequisite Knowledge:

Students should have working knowledge of the following skills:

- Construction of tables
- Interpreting the movie section of the newspaper
- Calculating elapsed time
- Computing with money
- Copying a pattern
- Continuing a pattern

Objectives:

Students will:

- copy and continue a pattern.
- build a pattern when given a description.
- describe a pattern.
- organize information and find regularity in the data.
- use a table to explore patterns.
- justify answers using mathematical vocabulary.
- determine a rule for a simple growing pattern.

Materials/Resources/Printed Materials:

- Pattern blocks/ unifix cubes/inter-locking links
- Pencils
- Newspaper - movie section
- Student Worksheets
- Teacher Resources
- Calculators (optional)

Development/Procedures:

Day 1:

Activity 1:

- Begin this unit by motivating your students and holding a discussion about the movies. i.e., What movies have you seen lately? What is your favorite movie? How often do you go to the movies? Where are the best seats in the theatre? How expensive are the movies?

- Share the scenario in the beginning of the unit. You may want to have an overhead transparency.

- Place the students into pairs.

- Allow the students to read the activity on their own.

- Give the students 10-15 minutes to try activity one with their partner.

- Check the students answers, whole class, on the overhead.

- Self - assess by thumbs up or thumbs down.

Activity 2:

- Discuss with your class how the seats in the theatre are arranged. You want them to recognize that the first row as they come into the theatre is a short row and that each row increases as they work their way to the center of the theatre.

- Give the students 10-15 minutes to read and attempt this activity with their partner.

- You may allow your students to build this pattern with a partner using unifix cubes.
- Have the students share their patterns and justify how they discovered this pattern.

Day 2:

Activity 3:

- Give the students 15 minutes to compute A and B. Pick a volunteer to put his/her responses on the overhead. Allow for any rich discussion to develop from this.

Activity 4:

- Put this activity on the overhead while the class reads and works the problem out at their seats.
- Check responses on the overhead.

Day 3:

Activity 5:

- Have the students, individually, read and compute the answer for all of the parts of Activity 5. This is intended to be the assessment part of the unit. How you want to score this is up to your professional decision. A rubric has been included.

Extension/Follow Up:

1. Language Arts: As a culminating activity for a novel unit, have your students design a filmstrip or flipbook giving them a length of time limit. See Animation by Patrick Jenkins for reference.
2. Language Arts: Write to persuade your parents to allow you to view a different rated movie then what you usually do.
3. Science: Research the nutritional value of the snacks at the theatre and have them create an alternate menu.

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Name_____
Date _____

Get the Big Picture

When you go to a Big Picture normally you see one show. Since your parents have not had to remind you to complete your homework for the past two months, they have decided to let you to take a few friends. You may see two shows during the matinee time-span, which is twelve o'clock to four o'clock.

Activity 1

Directions: Read the following problem and solve it.

As one of the homework assignments you were given in the past two months, you had to design a filmstrip that would last three minutes. Believe it or not, 360 images appear on the screen in fifteen seconds, 720 images in thirty seconds, and 1080 images in forty-five seconds. How many images would appear on the screen in your three minute filmstrip?

WORKSPACE

Activity 2

Directions: Read and solve.

A) When you enter a theatre, the first row is very short and they progress in length as they go down the aisle. There is room in the first row for four people to sit. In the second row, there is room for four more people to sit for a total of eight people in the row. Each row holds four more than the row above it. After you and your friends fill the seventh row, how many people will be in the seventh row?

WORKSPACE

B) How many people will be seated in rows one through ten? Justify your answer.

WORKSPACE

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Activity 3

Directions: Read and solve.

A) As stated previously, your parents, a few friends and yourself are going to the matinee. You will need to select your shows prior to going to the theatre. Find a copy of your local newspaper and show your parents and friends what movies have been selected and why they were selected.

WORKSPACE

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B) You will need to let your parents know how much money to bring so you call the theatre to find out the prices of tickets and snacks. It was recommended by the cashier for each child to have popcorn, soda and a ticket. $7.35 would be sufficient and that an adult would require $10.50. Your parents say you may take 4 friends (including yourself). Calculate how much money you will need. Justify your answer.

WORKSPACE

Activity 4

Directions: Read and compute.

The best Disney movie opened on Friday. The first day there were twenty-five people who saw the movie. Word got out and on the second day seventeen more people came than on the first day, so that sixty-seven people had seen the movie after the second day. On the third day, fifty-nine people came, seventeen more than on the second day. If each day seventeen more people saw the movie than the day before, on what day would 500 people have seen the movie? Explain your findings.

WORKSPACE

Activity 5

Directions: Read and solve.

A) As you are leaving the theatre, you notice that in honor of it's one year anniversary, the owners are giving away free coupons for popcorn, soda, and candy at the first exit door. The ticket master gives the first person in the line popcorn. The second person receives popcorn, the third receives soda, and the fourth receives candy. What free coupon do you get if you are the twenty-seventh person in line?

WORKSPACE

B) At the second exit door, they are giving away movie tickets in three stations. At the first station, every third person receives a free movie ticket.
At the second station every fourth person receives a free ticket and at the third station every fifth person receives a free ticket. Remaining the twenty-seventh person in line, which station would be ideal for you? Why? Which station would be ideal for the person behind you? Why?

WORKSPACE

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RUBRIC

3 I **showed my thinking** with picture, numbers sentences, etc.
I used a lot of **math language.**
I used **complete sentences** to explain my thinking.
I solved the problem **correctly** and gave **extra information**.
I used **problem solving strategies**.

2 I **showed by thinking** with pictures, numbers, sentences, etc.
I used **math language**.
I used **complete sentences** to explain my thinking.
I used information **correctly.**

1 I showed my thinking, but I had **some mistakes**.
I **did not use sentences** to explain my thinking.
Some of my information was correct.